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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,150	12/10/2003	Chih Yuan Huang	11064-US-PA	4810
31561 7590 03/26/2009 JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE 7 FLOOR-1, NO. 100 ROOSEVELT ROAD, SECTION 2 TAIPEI, 100 TAIWAN				
EXAMINER MARKOFF, ALEXANDER				
ART UNIT 1792		PAPER NUMBER		
NOTIFICATION DATE 03/26/2009		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USA@JCIPGROUP.COM.TW  
Belinda@JCIPGROUP.COM.TW

### Office Action Summary

**Application No.**

10/731,150

**Applicant(s)**

HUANG ET AL.

**Examiner**

Alexander Markoff

**Art Unit**

1792

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 9-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 12-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/20/09 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The applicants amended the claims to recite proportions of the components, which are not supported by the original disclosure.

### ***Response to Amendment***

4. The amendment filed 6/26/08 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material

which is not supported by the original disclosure is as follows: The applicants amended the claims (including the non elected claims 9 and 10) and the specification to recite proportions of the components, which are not supported by the original disclosure.

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 1-8 and 12-13 rejected under 35 U.S.C. 103(a) as being unpatentable over the state of the prior art admitted by the applicants in the specification in view of Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) further in view of Chang (US 2002/0020432).

The admitted prior art (Background of the Invention, pages 1 and 2) teaches that the claimed method except for the step of cleaning the wafer with ozonated water prior to the RCA cleaning steps.

However, the use of ozonated water to remove organic contamination prior to the RCA cleaning was known in the art as evidenced by Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763). See at least Background of the Invention in US Patent NO 6,491,763 and part [0059] in US 2003/0045098.

It would have been obvious to an ordinary artisan at the time the invention was made to include an ozonated water cleaning step prior to the conventional RCA cleaning disclosed by the admitted prior art with reasonable expectation of success in order to enhance the process because Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) teaches such as known to remove organic contamination.

With respect to claims 12 and 13 Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) do not disclose specifically

claimed concentrations of ozone, but it would have been obvious to an ordinary artisan to find an optimum concentration of the active component by routine experimentation in order to enhance the process.

The admitted prior art modified by the teachings Verhaverbeke et al (US 2003/0045098) and Verhaverbeke et al (US Patent NO 6,491,763) does not teach the second solution comprising an ozonated water. However, Chang teaches that such step was conventional in the cleaning of the gate oxide structures with RCA chemicals. See at least parts [0005-0006].

It would have been obvious to an ordinary artisan at the time the invention was made to include the ozonated water step in the modified method of the admitted prior art after cleaning with RCA with reasonable expectation of success because Chang recommends such.

### ***Response to Arguments***

9. Applicant's arguments filed 1/20/09 have been fully considered but they are not persuasive.

The applicants again state that they made the amendment to correct typographical errors.

The examiner again disagrees.

The applicants are trying to introduce new proportions by calling the previously disclosed and claimed proportions a typographical mistake. This is not persuasive.

It is noted that the previously recited and claimed proportions were presented in the specification and in the claims. In the other words the referenced subject matter was presented in multiple places of the original disclosure.

It is also noted that all co-inventors have signed a Declaration, which states that they have reviewed and understand the content of the specification, including the claims.

The applicants failed to present any evidence to support the statement regarding the alleged typographical errors.

It is noted that the applicants state in their Remarks that it is impossible to maintain the mixture with originally disclosed proportions.

The applicants state that it is impossible to maintain the solutions with the originally disclosed proportions. The applicants provided the solubility data for the ammonia in water and hydrogen chloride in water to support their arguments. However, the referenced data shows that solutions with at least some of the originally recited proportions could be obtained.

Further, it is noted that the original disclosure is silent regarding what is referenced as the "proportions". Thereby claims 7 and 8 were previously rejected. The referenced rejection was made because the claims recite the "proportions", as the proportions of the pure chemicals.

The examiner would like to note that the proportions of the treatment chemicals in the standard RCA solutions are conventionally given in the art as the volume proportions of the concentrated solutions of the referenced chemicals. See at least Verhaverbeke et al as the evidence.

Thereby, it appears that it is possible to obtain and maintain the solutions with the originally disclosed proportions, if the volume proportions of the concentrated solutions are referenced. However, it is again noted that neither specification, nor claims recite the proportions as the proportions of the concentrated solutions.

Further, the fact that the applicants realized that they have originally disclosed inoperable embodiments does not change the fact that the referenced amendment is not supported by the original disclosure.

With the respect to the art rejection the applicants again argue that the claimed invention does not require all the solutions used in the RCA cleaning.

This is not persuasive because the claims are written using "comprising". Thus the claims do not exclude any other processing steps. It is noted that the applicants amended claim 1 to recite that a cleaning process which consists of the recited steps. However, the claim still recites a cleaning method, which is defined by using "comprising". Thereby the claimed method does not exclude any other processing steps.



The applicants again argue that the solutions recited by claim 1 are not the same as the solutions of the conventional RCA cleaning.

The applicants again failed to provide any factual support to the referenced argument.

It is again noted that the applicants' argument contradicts to their own specification.

This is because the specification clearly states that the  $\text{H}_2\text{O}:\text{H}_2\text{O}_2:\text{NH}_4\text{OH}$  and  $\text{H}_2\text{O}:\text{H}_2\text{O}_2:\text{HCl}$  are conventional solutions of the RCA cleaning, which are known in the art as SC1 and SC2. It is again noted that the applicants elected the specie of  $\text{H}_2\text{O}:\text{H}_2\text{O}_2:\text{NH}_4\text{OH}$ , which is the SC1 solution of the RCA cleaning.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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